

ABSTRACT

The single crystal of alkaline earth metal fluoride of the invention is produced by a single crystal pulling method, has a straight barrel part diameter of not less than 17 cm, preferably has a straight barrel part length of not less than 5 cm, and has a light transmittance, as measured at a wavelength of 632.8 nm, of not less than 80%, preferably 90 to 98%. Further, the main crystal growth plane of the single crystal of the invention is the {111}plane or the {100}plane. The single crystal of alkaline earth metal fluoride of the invention has a large diameter as described above, and in spite that it is in an as-grown state, the peripheral surface is not opaque and the visible light transmittance is high. Therefore, evaluation of bubbles or inclusions in the crystal becomes feasible without performing complicated machining of the crystal, and from the single crystal, a large-sized optical material having advantageous properties such as high quality and high uniformity can be cut out.